REMARKS

In the outstanding Office Action, the Examiner has rejected claims 1, 3-14, and 21-25. Claims 1, 3-14, and 21-25 remain pending in this application. Claims 1 and 21 have been amended to further clarify the invention. In particular, the claims have been amended to recite that the amorphous layer has "an optical transparency of less than 0.3 db/cm loss," which as explained in paragraph [0066] of the specification results from a pulsed-dc, biased deposition of materials.

I. Claim Rejections Under 35 U.S.C. § 103(a)

Claims 1, 3-4, 6-7, 9-12, and 21-25

Claims 1, 3-4, 6-7, 9-12, and 21-25 are rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 6,088,492 to Kaneko et al. (*Kaneko*) in view of U.S. Patent No. 6,549,688 to Bazylenko (*Bazylenko*). Applicant traverses this rejection.

The Examiner opines that *Kaneko* teaches "an optical waveguide device [10] comprising integrated laser diodes [16] and amorphous, film-based smooth-surface waveguides, with finely tuned index of refraction, doped with titanium-oxides or aluminum oxides and a refractive index contrast of at least 0.2% (See Keneko, fig. 6; Abstract; col. 1, ll. 35-60; col. 3, l. 38 - col. 4-l.33; col. 6, ll. 1-5; col. 15, ll. 35-45)." (Office Action, page 2). However, the Examiner has misinterpreted *Kaneko*. *Kaneko* does not teach "at least one amorphous film-based slab waveguide comprising a rare-earth doped material comprising Al_2O_3, Y_2O_3, or TiO_2, having a refractive index contrast of at least 0.2% and optical transparency of below 0.3 db/cm loss formed on the buffer layer, coupled to receive light from the at least one laser diode, and including an integrated photodiode formed on the substrate," as is recited in claim 1. In

particular, *Keneko* does not teach an "amorphous film-based slab waveguide." Instead, *Keneko* teaches a polymer based waveguide. As disclosed in *Keneko*, "[t]he invention relates . . . more specifically to a manufacturing method of an optical waveguide using a siloxane polymer, and an optoelectronic hybrid substrate using the optical waveguide comprising a siloxane polymer." (*Keneko*, col. 1, lines 13-21). Therefore, *Keneko* does not teach an "amorphous film-based slab waveguide comprising a rare-earth doped material comprising Al_2O_3, Y_2O_3, or TiO_2, having a refractive index contrast of at least 0.2% and optical transparency of below 0.3 db/cm loss. . . ," as is recited in claim 1.

Further, *Bazylenko* does not make up the difference. *Bazylenko* teaches "an integrated optical planar waveguide amplifier." (*Bazylenko*, col. 1, lines 7-10). *Bazylenko* also teaches that "[t]he amplifier can have a core composed of aluminum oxide doped with erbium and/or ytterbium." (*Bazylenko*, Abstract). However, *Bazylenko* does not teach deposition of materials with "optical transparency of below 0.3 db/cm loss," as is recited in claim 1. *Bazylenko* teaches depositing silica by plasma-enhanced vapour deposition (PECVD) in the absence of nitrogen in order to reduce the optical absorption in the 1.50 μm to 1.55 μm wavelength range. However, nowhere does *Bazylenko* teach "at least one amorphous film-based slab waveguide comprising a rare-earth doped material comprising Al_2O_3, Y_2O_3, or TiO_2, having a refractive index contrast of at least 0.2% and optical transparency of below 0.3db/cm loss formed on the buffer layer," as is recited in claim 1.

Further, one skilled in the art would not combine the teachings of *Bazylenko* with those of *Keneko* in the fashion suggested by the Examiner. *Keneko* teaches deposition of a polymer based optical layer while *Bazylenko* teaches a CVD deposited oxide layer. The two materials and the two deposition techniques are widely different. *Keneko*, for example, teaches deposition of

siloxane polymer on an electronic circuit. (*See Keneko*, col. 1, lines 13-21; col. 1, lines 49-60). *Bazylenko* teaches deposition of planar waveguide devices on a single uniform substrate. Therefore, the teachings of *Keneko* and *Bazylenko* would not be combined by one of ordinary skill in the art.

Claim 1 is therefore allowable over the combination of *Kaneko* and *Bazylenko*. Claims 3-4, 6-7, and 9-12 depend from claim 1 and are allowable over *Kaneko* and *Bazylenko* for at least the same reasons as is claim 1. Claim 21, although of differing scope from claim 1, recites elements similar to those discussed above with respect to claim 1. Therefore, claim 21 is allowable over the combination of *Kaneko* and *Bazylenko* for at least the same reasons as is claim 1. Claims 22-25 depend from claim 21 and are therefore allowable for at least the same reasons as is claim 21.

Claim 5

Claims 1 and 5 are rejected under 35 U.S.C. § 103(a) as being obvious over *Kaneko* in view of *Bazylenko*, and further in view of the reference entitled "Theory and Optimization of Lens Ducts" to Beach (*Beach*). As discussed above, claim 1 is allowable over the combination of *Kaneko* and *Bazylenko*. *Beach* does not cure the defects in the teachings of *Kaneko* and *Bazylenko*. *Beach* teaches the use and theory of lens ducts (*Beach*, Abstract), but does not teach "at least one amorphous film-based slab waveguide comprising a rare-earth doped material comprising Al_2O_3, Y_2O_3, or TiO_2, having a refractive index contrast of at least 0.2% and optical transparency of below 0.3db/cm loss formed on the buffer layer," as is recited in claim 1. Therefore, claim 1 is allowable over the combination of *Kaneko, Bazylenko,* and *Beach*. Claim 5

depends from claim 1 and is allowable over the combination of *Kaneko, Bazylenko,* and *Beach* for at least the same reasons as is claim 1.

Claims 7-8

Claims 1 and 7-8 are rejected under 35 U.S.C. § 103(a) as being obvious over *Kaneko* in view of *Bazylenko*, and further in view of U.S. Patent Publication No. 2003/0185266 to Henrichs (*Henrichs*). As discussed above, claim 1 is allowable over the combination of *Kaneko* and *Bazylenko*. *Henrichs* does not cure the defects in the teachings of *Kaneko* and *Bazylenko*. *Henrichs* teaches a "(FCSSL) 'Folded Cavity Solid-State Laser' comprising a waveguide (35) having at least one total internal reflecting prism (35A) constructed from ion-implanted laser-active material defining a folded cavity . . . ," (*Henrichs*, Abstract), but does not teach "at least one amorphous film-based slab waveguide comprising a rare-earth doped material comprising Al_2O_3, Y_2O_3, or TiO_2, having a refractive index contrast of at least 0.2% and optical transparency of below 0.3db/cm loss formed on the buffer layer," as is recited in claim 1. Therefore, claim 1 is allowable over the combination of *Kaneko, Bazylenko*, and *Henrichs*. Claims 7-8 depend from claim 1 and are allowable over the combination of *Kaneko*, *Bazylenko*, and *Henrichs*, for at least the same reasons as is claim 1.

Claims 10-14

Claims 1 and 10-14 are rejected under 35 U.S.C. § 103(a) as being obvious over *Kaneko* in view of *Bazylenko*, and further in view of U.S. Patent Publication No. 2003/0044118 to Zhou et al. (*Zhou*). As discussed above, claim 1 is allowable over the combination of *Kaneko* and *Bazylenko*. *Zhou* does not cure the defects in the teachings of *Kaneko* and *Bazylenko*. *Zhou*

teaches that "[i]n particular, the present invention relates to methods for transforming the optical mode between a photonic device and one or more optical fibers" and "to the integrated fabrication of such structures on a module platform or the photonic device, their connections with one or more input/output optical fibers." (*Zhou*, par. [0003]). *Zhou* does not teach "at least one amorphous film-based slab waveguide comprising a rare-earth doped material comprising Al_2O_3, Y_2O_3, or TiO_2, having a refractive index contrast of at least 0.2% and optical transparency of below 0.3db/cm loss formed on the buffer layer," as is recited in claim 1. Therefore, claim 1 is allowable over the combination of *Kaneko*, *Bazylenko*, and *Zhou*. Claims 10-14 depend from claim 1 and are therefore allowable over *Kaneko*, *Bazylenko*, and *Zhou* for at least the same reasons as is claim 1.

II. Conclusion

In view of the foregoing amendments and remarks, Applicant respectfully requests reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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